MULTIMEDIA UNIVERSITY

STUDENT ID NO

VENUE : _____

SEAT NO : _____

MULTIMEDIA UNIVERSITY

SUPPLEMENTARY EXAMINATION

TRIMESTER 1, 2015/2016

TCP 1101 – PROGRAMMING FUNDAMENTALS
TCP1231 – COMPUTER PROGRAMMING 1

(All sections / Groups)

17 NOV 2015
2.30 PM – 4.30 PM
(2 HOURS)

Question	Marks
1	
2	
3	
4	
Total	

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 9 pages with 4 Questions only.
2. Attempt All the Questions. The distribution of the marks for each question is given.
3. Write all your answers in this Question paper.

Question 1

Unless otherwise stated, every code segment provided in every question is contained within a `main()` function, complete with the directive `#include <iostream>`, `#include <vector>`, and the statements `using namespace std;` and `return 0;`
Write the output as the result of execution of the following code segments. [10 marks]

(a)	`int a = 1, b = 2, c = 5;`
	
	`while (a + c < 12)`
	`{`
	`  a = a + 4;`
	`  b = a + b;`
	`}`
	`cout << b;`	

(b)	`int x=0, y=5;`
	
	`for (x = 11; x > 0; --x)`
	`{`
	`  x -= 4;`
	`  y -= x + 1;`
	`}`
	`cout << x;`	

(c)	`int x, y = 2;`
	`float z = 17;`
	`x = z / y;`
	`cout << x;`	

(d)	`int a = 1, b = 2, c = 3;`
	`int d = b * c + a;`
	`cout << -d + 14 / 2 * b + (a - c);`	

(e)	`char x = 'a';`
	`int y = 5;`
	
	`switch (x)`
	`{`
	`  case 'a': y = 10;`
	
	`  case 'b': y = 20;`
	`  break;`
	`}`
	`cout << y;`	

(f)	`int array[7] = {2, 4, 7, 9, 13, 16, 21};`
	`int answer = array[4] + 2 * array[2];`
	`cout << answer + 4;`	

(g)

```
int x = 2, y = 0, z = 1;
if (y || x)
   if(x <= 3)
      x = 3;
   else
      if(x >= z * y + 4 * x)
         x = 4;
cout << x;
```

(h)

```
int a = 1, b = 2, c = 3;
int *m = &b;
int *n = &a;
int *p = m;
*p= 3;
cout<<(*m - 1) * (*n) + *p;
```

(i)

```
vector<int> student_marks;
for(int i = 0; i < 20; i++)
{
      student_marks.push_back(i);
}
cout<<student_marks[3];
```

(j)

```
int Func(int x, int y)
{
   if(x > y)
    return x + 1;
   else
    return y + 2;
}
int main( )
{
 int x = 1, y = 2;
 int Num = Func(x, y);
 cout << Func(x+3, y-2)+ Num;
}
```

Question 2

(a) Three common program errors are syntax error, runtime error, and logic error. Briefly explain with an example for each one of them. [3 marks]

Continued ...

(b) Draw a structure diagram of at least three levels in height that allows the program to get price and quantity from the user for calculating the total price. The total price is the product of price and quantity. [3 marks]

(c) What is the problem in the following C++ code segment? Explain your answer. Assume that the code does not have syntax error and can be executed. The line numbers at the right are shown only for reference. [2 marks]

```
int x = 1;                  // Line 1
while (x != 12)             // Line 2
{                           // Line 3
    cout << x << endl;      // Line 4
    x = x + 2;              // Line 5
}                           // Line 6
```

(d) Write an `if-else` statement in C++ that outputs the word ***Warning*** provided that either the value of the variable ***temperature*** is greater than or equal to 100, or the variable ***pressure*** is greater than or equal to 200, or both. Otherwise, the `if-else` statement outputs the word ***Normal***. The variables are of type integer. [2 marks]

Question 3

(a) Given the definition of namespace `greet`, write codes to call a function `greeting` in the following `main` function. [2 marks]

```
namespace greet
{
      void greeting()
      {
            cout << "Hello, all the best in your exam.\n";
      }
}

int main()
{

}
```

(b) Write a program to get two phrases and display whether the two phrases are equal. (Hint: use `getline`) [4 marks]

Sample output 1:
Enter first phrase => I Love MMU
Enter second phrase => I Love MMU
Equal

Sample output 2:
Enter first phrase => I Love MMU
Enter second phrase => I Love TM
Not Equal

(c) The following program is using `CDAccount` class. However, the `CDAccount` class definition is missing. Write the `CDAccount` class definition so that the program can run successfully. [4 marks]

```
#include <iostream>
using namespace std;
```

```
int main()
{
    CDAccount account;
    account.set_balance(100000.00); // balance is 100000
    account.set_interest_rate(0.05);      // interest rate is 5%
    account.set_term(30);                 // term is 30 years

    return 0;
}
```

Question 4

(a) Write a program which reads a word list from *WordList.txt*, stores the words in a dynamically allocated string array and then displays them one by one. One element of the array stores only one word. The first line of *WordList.txt* indicates the size of the word list. [6 marks]

Sample of WordList.txt

```
20

Process
Mac
Office
Network
Servers

Applications
Read
Daily
Comics
Moves

Choice
Jack
Data
Brokers
Valve

Handbook
Arrows
Emacs
UNIX
Dictionary
```

Sample output

```
Process Mac Office Network Servers
Applications Read Daily Comics Moves
Choice Jack Data Brokers Valve Handbook
Arrows Emacs UNIX Dictionary
```

```
#include <iostream>
#include <fstream>
using namespace std;

int main()
{
  ifstream fileIn;
  fileIn.open( "WordList.txt" );

  // Write your code from here
```

```
    // End  your code here
    // Remember to deallocate the dynamic array used to avoid memory
    // leak

    fileIn.close();

    return 0;
}
```

(b) What is the output of the following program? [3 marks]

```
#include <iostream>
using namespace std;
int main()
{
 int  n[ 7 ] = { 23, 0, 4, 17, 3, 9, 10 };
 cout<< *n <<" "<< *(n+2) <<" "<< n[1];
 cout << endl;

 int *p = n+2;
 cout<< *p <<" "<< *(p+2) <<" "<< p[1];
 cout << endl;

}
```

(c) Explain what line 4 does. [1 mark]

```
int main()          // Line 1
{                   // Line 2
  int n;            // Line 3
  int *p = &n;      // Line 4
  ...
  ...
}
```